

**23.4****POLYMERIZATION****Section Review****Objectives**

- Describe how additional polymers are formed
- Describe how condensation polymers are formed

**Vocabulary**

- polymer
- monomers

**Part A Completion**

Use this completion exercise to check your understanding of the concepts and terms that are introduced in this section. Each blank can be completed with a term, short phrase, or number.

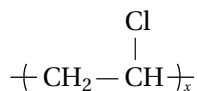
A 1 is a large molecule formed by the covalent bonding 1. \_\_\_\_\_  
of repeating smaller molecules. 2 polymerization occurs when 2. \_\_\_\_\_  
unsaturated monomers react to form a polymer. 3 polymers 3. \_\_\_\_\_  
are formed by the head-to-tail joining of monomer units. 4. \_\_\_\_\_  
4, formed by the joining of ethene molecules, is an 5. \_\_\_\_\_  
example of an addition polymer. 5, formed by the joining of 6. \_\_\_\_\_  
dicarboxylic acids and dihydroxy alcohols, are examples of  
condensation polymers. The physical properties of polymers, such  
as hardness and rigidity, depend in part on the 6 of the  
carbon chains in the polymer molecules.

**Part B True-False**

Classify each of these statements as always true, AT; sometimes true, ST; or never true, NT.

- \_\_\_\_\_ 7. Polymerization reactions require a catalyst.
- \_\_\_\_\_ 8. Addition polymers form when unsaturated monomers react to form a polymer.

- \_\_\_\_\_ 9. The condensation polymerization of a carboxylic acid with an amine produces a polyester and water.
- \_\_\_\_\_ 10. Various types of nylon are polyamides.
- \_\_\_\_\_ 11. The basic repeating unit of polyvinyl chloride could be written as



## Part C Matching

Match each description in Column B to the correct term in Column A.

### Column A

\_\_\_\_\_ 12. polymer

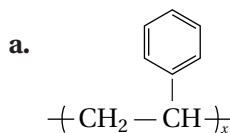
\_\_\_\_\_ 13. addition polymer

\_\_\_\_\_ 14. condensation polymerization

\_\_\_\_\_ 15. Kevlar<sup>TM</sup>

\_\_\_\_\_ 16. polystyrene

### Column B



b. a large molecule formed by the covalent bonding of repeating smaller molecules

c. polypropylene

d. requires that there be two functional groups on each monomer molecule

e. a tough, flexible, and flame-resistant condensation polymer used to construct bullet-proof vests

## Part D Questions and Problems

Answer the following in the space provided.

17. Show the addition polymerization of ethene to form polyethylene.
18. Describe the characteristics of a polyester. Give an example of a polyester.